WHAT IS CLAIMED IS:

1. A PEG-polypeptide homodimer complex comprising a PEG linker and two molecules of a physiologically active polypeptide, wherein the two molecules of the physiologically active polypeptide are connected via the PEG linker, and each of the two molecules of the physiologically active polypeptide is modified with one molecule of PEG.

2. The complex of claim 1, wherein each amino terminal of the two molecules of the physiologically active polypeptide is connected via the PEG linker.

3. The complex of claim 1, wherein the amino group of a lysine residue of the physiologically active polypeptide is modified with said one molecule of PEG.

4. The complex of claim 1, wherein the physiologically active polypeptide is selected from the group consisting of human growth hormone, interferon, granulocyte colony stimulating factor, granulocyte colony stimulating factor derivative having an amino acid sequence wherein cysteine at position 17 is replaced with serine, erythropoietin, insulin, interleukin, granulocyte macrophage colony stimulating factor, and tumor necrosis factor receptor.

5. The complex of claim 1, wherein the PEG linker has two aldehyde or propionic aldehyde groups at both ends.

6. The complex of claim 1, wherein the molecular weight of the PEG linker ranges from 1 to 100 kDa.

7. The complex of claim 6, wherein the molecular weight of the PEG linker ranges from 2 to 20 kDa.

8. The complex of claim 1, wherein said PEG for modifying the physiologically active polypeptide has at one end a reactive group selected from the group consisting of succinimidyl propionate, succinimidyl carboxymethyl, succinimidyl carbonate and maleimide.

9. The complex of claim 1, wherein said PEG for modifying the physiologically active polypeptide is linear or branched.

10. The complex of claim 1, wherein the molecular weight of said PEG for modifying the physiologically active polypeptide ranges from 1 to 100 kDa.

11. The complex of claim 10, wherein the molecular weight of said PEG for modifying the physiologically active polypeptide ranges from 20 to 40 kDa.

12. A method for preparing the PEG-polypeptide homodimer complex of claim 1, which comprises the steps of:

(a) preparing a homodimer by connecting two molecules of a physiologically active polypeptide via a PEG linker; and

(b) modifying each of the two molecules of the physiologically active polypeptide of the homodimer with one molecule of PEG.